



NREL Design Evaluation Procedure (DP01)

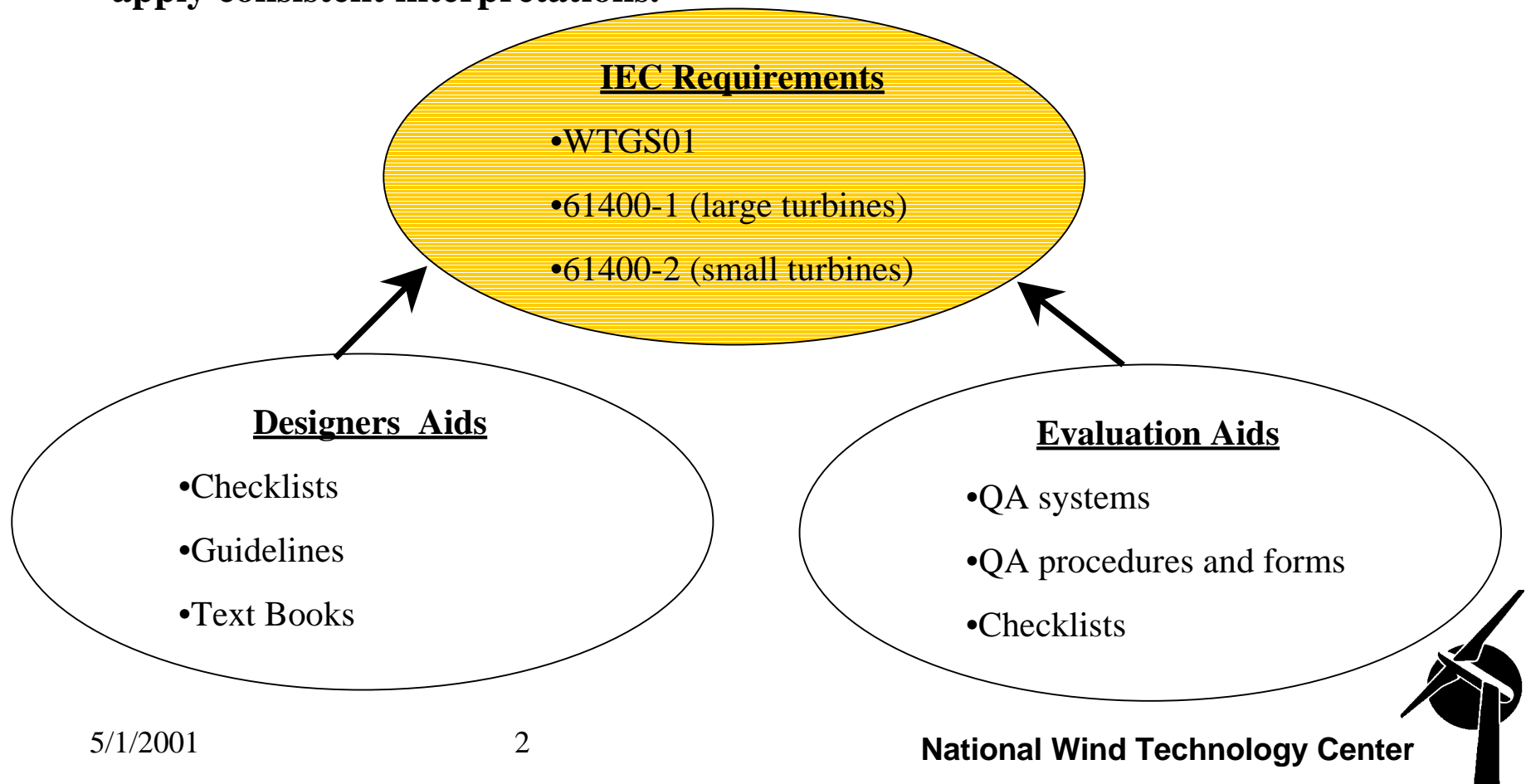
- DP01 is a quality procedure that outlines the steps NREL follows in the Design Evaluation process
- Assures critical quality checks are followed
- Assures conformance with IEC WT01 Certification Standard.
- Conforms with ISO Guide 65 (certification bodies)
- Refer to the <NREL Certification Guidelines/NREL Quality Documents> folder on the procurement web page to find this and other documents describing NREL's certification procedures





Review of Standard Requirements

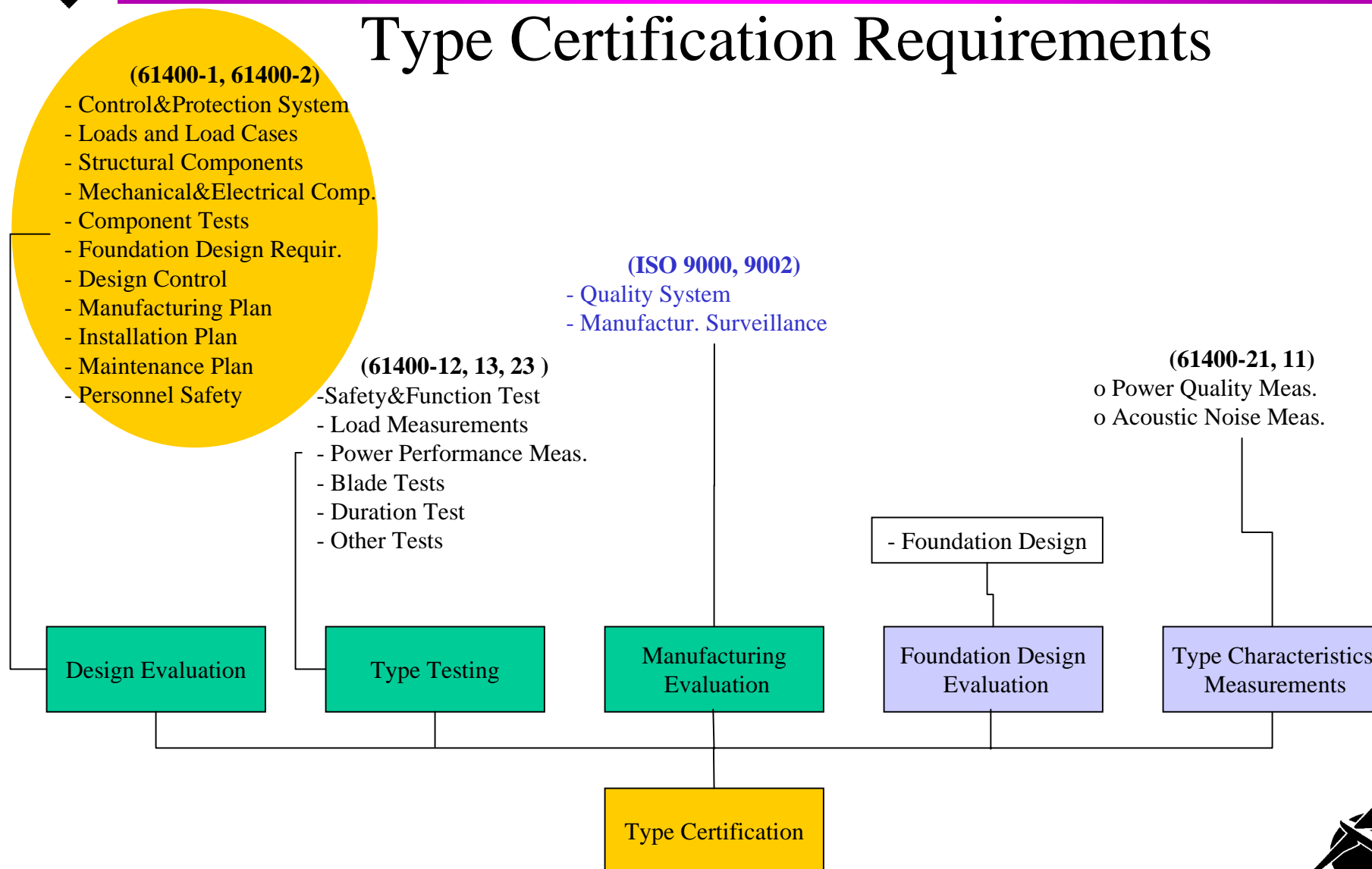
- Certification requirements are set by IEC WT01
- Technical design requirements are set by IEC 61400-1 (or -2)
- Guidelines and checklists help designs meet requirements and evaluators apply consistent interpretations.





IEC WTGS 01 (61400-22)

Type Certification Requirements





Primary IEC 61400-1 Technical Requirements

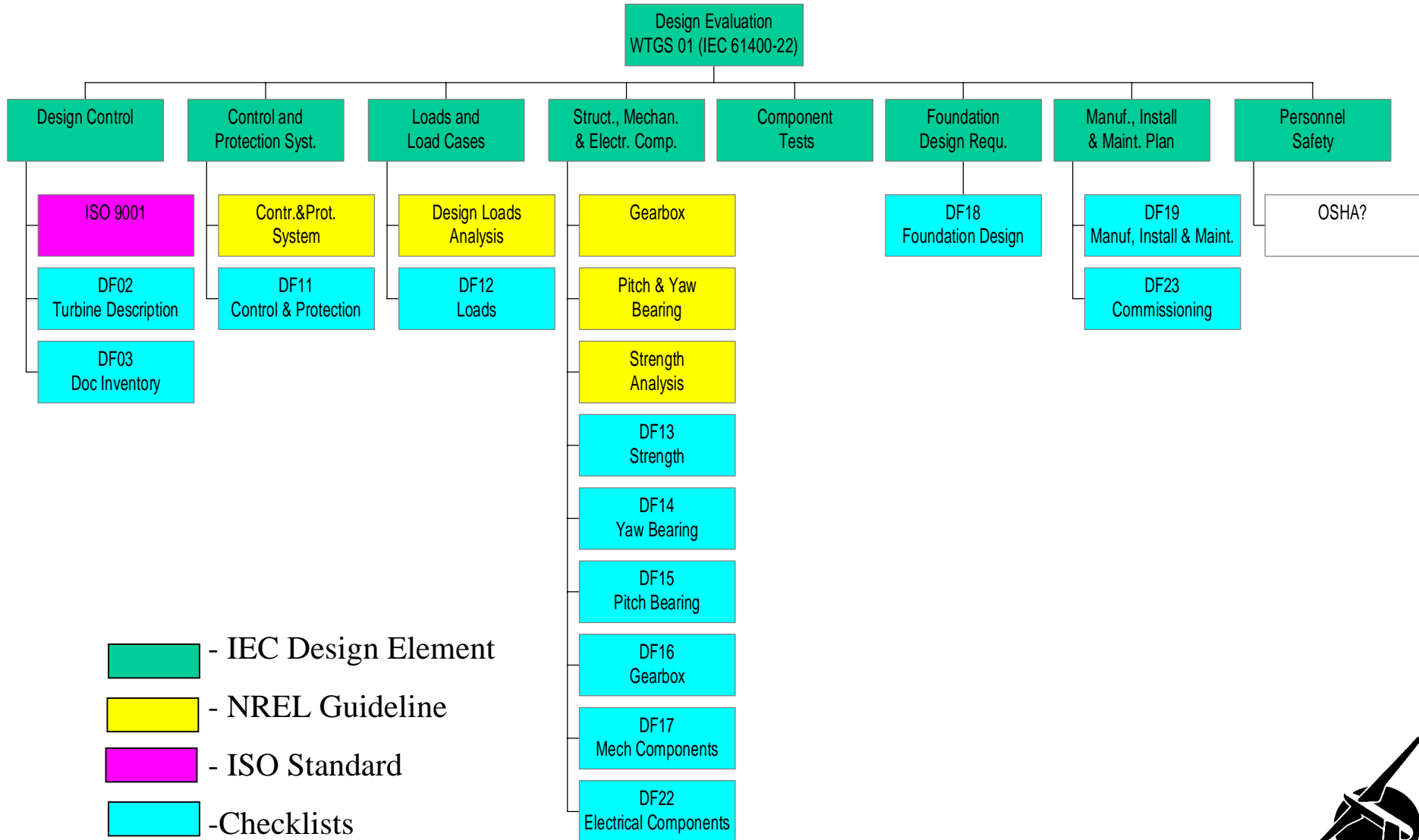
- Principle elements (Design Methods, QA, Markings)
- External conditions
- Safety classes
- Loads cases and load combinations
- Structural design
- Control and protection system
- Mechanical systems
- Electrical systems
- Assessment of external conditions
- Assembly, installation and erection
- Commissioning, operation and maintenance





NREL

NREL Checklists & Guidelines



5/1/2001

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National Wind Technology Center



Design Evaluation Steps

- First the subcontractor has defined the configuration he will fill in DF02 (configuration description) (done by PDR)
- second the subcontractor will define (if one does not already exist) a documentation system that includes all the documentation required in WT01 Appendix A (see DF03, next slide) (done by PDR)
- third the subcontractor will complete form DF03 which identifies all the design documentation that will be delivered. This can and should be done well before the documentation is actually completed as part of the project planning process. (done by PDR)
- as documents are delivered they are evaluated. When all are successfully evaluated Design Conformity Statement is issued. (done at FDR)





Design Document Inventory (DF03)

Appendix A of WTGS 01

Element	Sub-element	Available Standards Guidelines and Checklists	Drawings	Analysis	Description	Specification	Schematic	Formerly Issued Conformity Statements or Certificate #	Satisfactory Sub-Element (EPL name and date)
1.0	General Turbine Description	DF02							
	1.1 General Turbine Characteristics and Configuration Description								
	Turbine description and general specifications								
	Major component weights and centres of gravity								
	Operational limits								
	Electrical power system								
	Electrical control system								
	Hydraulics and pneumatics								
	1.2 External conditions and design class								
	1.3 Control and protection philosophy								
	1.4 Codes and standards								
	1.5 Co-ordinate Systems								
2.0	Design Control Procedure	ISO 9001, clause 4.4							
	2.1 Document Description and Organization								
3.0	Control and Protection System	DF11							
	3.1 Description and component specifications including transducers and sensors								
	3.2 Detailed control logic flow chart								
	3.3 Set point list								
	3.4 Control system software								

